

Serial No. 09/873,614
Reply to Office Action of November 17, 2004

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for manufacturing nanostructure patterns comprising:

overlaying a parent structure selectively deposited on a substrate with an a plurality of organic ~~molecule~~ molecules, each of said plurality having a metal ion coordinating portion adsorbing on the parent structure in preference to the substrate to form a deposit consisting of an organic molecule ~~layered~~ single layer contacting the parent structure;

applying a metal ion solution to the organic molecule ~~layered~~ single layered parent structure to attach the metal ion to the metal ion coordinating portion of the organic ~~molecule~~ molecules;

forming an organic molecule ~~layer~~ single layer attached to the metal ion;

depositing a layer over the at least one parent structure and in contact with at least a portion of the organic molecule ~~layer~~ single layer; and

removing the organic molecule ~~layer~~ single layer contacting the parent structure and the organic molecule layer to leave a residual structure.

2. (Currently Amended) The method of claim 1 wherein the step of removing the organic ~~resist~~ molecule single layer contacting the parent structure is chemical.

3. (Currently Amended) The method of claim 1 wherein the step of removing the organic ~~resist~~ molecule single layer contacting the parent structure is electrochemical.

Serial No. 09/873,614

Reply to Office Action of November 17, 2004

4. (Currently Amended) The method of claim 1 wherein the step of removing the ~~multilayer organic molecule resist~~ single layer contacting the parent structure removes a portion of the layer deposited.

5. (Original) The method of claim 1 wherein the residual structure includes a line.

6. (Original) The method of claim 1 wherein the residual structure includes a dot.

7. (Original) The method of claim 1 wherein the residual structure includes a ring.

8. (Original) The method of claim 1 wherein the residual structure includes two or more adjacent lines.

9. (Previously Presented) The method of claim 1 wherein a first portion of the at least one parent structure is a first material and a second portion of the at least one parent structure is a second material.

10. (Original) The method of claim 1 further comprising imaging the residual structure with electron microscopy.

11. (Original) The method of claim 1 further comprising imaging the residual structure with scanning probe microscopy.

Serial No. 09/873,614

Reply to Office Action of November 17, 2004

12. (Original) The method of claim 1 wherein the substrate is silicon.
13. (Previously Presented) The method of claim 1 wherein the organic molecule is a mercaptoalkanoic acid.
14. (Currently Amended) The method of claim 1 wherein the ~~layers of the multilayer~~ organic molecule ~~resist single layer contacting the parent structure and the organic molecule~~ single layer are connected with ions.
15. (Currently Amended) The method of claim ~~13~~ 14 wherein ~~each layer or organic molecules is connected with~~ the ions are Cu^{2+} ions.
16. (Previously Presented) The method of claim 1 further comprising smoothing the at least one parent structure.
17. (Original) The method of claim 16 wherein smoothing is accomplished chemically.
18. (Original) The method of claim 16 wherein smoothing is accomplished electrochemically.

Serial No. 09/873,614
Reply to Office Action of November 17, 2004

19. (Previously Presented) The method of claim 1 further comprising designing the at least one parent structure to result in the residual structure having a width less than a width of the at least one parent structure.

20. (Currently Amended) The method of claim 19 wherein the step of designing ~~includes~~ comprises designing the at least one parent structure to have at least one concave segment.

21. (Original) The method of claim 1 further comprising removing a portion of the residual structure.

22. (Currently Amended) The method of claim 1 further comprising:
overlaying at least a portion of the residual structure with a second organic molecule having a metal ion coordinating portion adsorbing on the ~~parent~~ residual structure in preference to the substrate to form an organic molecule layer single layer contacting the ~~parent~~ residual structure;

applying a metal ion solution to the second organic molecule ~~layered-parent~~ single layer contacting the residual structure to attach the metal ion to the metal ion coordinating portion of the second organic molecule;

forming ~~an~~ a second organic molecule layer single layer to the metal ion;

depositing a second layer over the residual structure and in contact with at least a portion of the second organic molecule layer single layer; and

Serial No. 09/873,614
Reply to Office Action of November 17, 2004

removing the second organic molecule ~~layer~~ single layer contacting the ~~parent~~ residual structure and the organic molecule ~~layer~~ single layer to leave a second residual structure.

23. (Original) The method of claim 22 further comprising smoothing the residual structure.

24. (Original) The method of claim 23 wherein smoothing is accomplished chemically.

25. (Original) The method of claim 23 wherein smoothing is accomplished electrochemically.

26. (Original) The method of claim 22 further comprising designing the residual structure to reduce the second residual structure size.

27. (Original) The method of claim 22 wherein the second layer adheres only to the residual structure.

28. (Original) The method of claim 22 further comprising removing a portion of the second residual structure.

29. (Original) The method of claim 22 further comprising removing a portion of a subsequent generation residual structure.

Serial No. 09/873,614
Reply to Office Action of November 17, 2004

Claims 30-32 (Canceled)

33. (Previously Presented) The method of claim 1 further comprising designing the at least one parent structure to result in the residual structure being spaced more closely than the at least one parent structure.

34. (Currently Amended) The method of claim 1 further comprising the step of:
repeating in sequence the steps of applying the metal ion solution and forming the organic molecule ~~layer~~ single layer.

35. (Currently Amended) The method of claim 34 wherein the repetition step is repeated until up to 39 layers of the organic molecule ~~layer~~ single layer are formed.

36. (Previously Presented) The method of claim 1 wherein the substrate is a silicon oxide.